INTRODUCTION

On Sunday, 10 January 1999, as part of the 78th annual meeting of the Transportation Research Board (TRB), the leading researchers in the field assembled for a day-long *Workshop on New Approaches to Liquefaction Potential*. The Federal Highway Administration (FHWA) provided funding for the workshop, which was co-sponsored by the TRB Committee on Foundations and Other Structures (A2K03) and the TRB Bridge Committee Task Force on Seismic Design (A2C52). The objectives of the workshop were to:

- introduce the geotechnical and bridge design communities to FHWA Geotechnical Engineering Circular (GEC) No. 3, *Design Guidance: Geotechnical Earthquake Engineering for Highways, Volume 1 – Design Principles* (Report No. FHWA-SA-97-076) and *Volume 2 – Design Examples* (Report No. FWA-SA-97-077);

- introduce the geotechnical and bride design communities to *Module 9, Geotechnical Earthquake Engineering*, of the National Highway Institute (NHI) Training Course in Geotechnical and Foundation Engineering; and

- supplement the section on seismic hazard analysis in GEC No. 3 with information on the 1997 National Center for Earthquake Engineering (NCEER) Recommendations for Ground Motion Characterization for Seismic Design of Highway Facilities; and

- supplement the information on liquefaction in GEC No.3 with information on new approaches to evaluation of liquefaction potential, including the 1997 NCEER Workshop on Evaluation of Liquefaction Resistance of Soils and more recent developments in the field.

Workshop presenters included:

- Ian Friedlund, Multi-disciplinary Center for Earthquake Engineering (formerly NCEER) on the *1997 NCEER Recommendations for Ground Motion Characterization for Seismic Design of Highway Facilities*;

- Prof. I.M. Idriss of the University of California at Davis with an *Update on the Seed-Idriss Simplified Method*;

- Jeff Farrar of the United States Bureau of Reclamation on *Energy Measurements During Standard Penetration Testing*;

- Prof. Kenneth Stokoe of the University of Texas at Austin on *Non - Intrusive Evaluation of Liquefaction Potential*;

- Prof. T. Leslie Youd of Brigham Young University on *Estimating Liquefaction-Induced Ground Deformations*;

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- Professor Raymond B. Seed of the University of California at Berkeley on *Evaluating Residual Shear Strength*;

- Professor Ricardo Dobry of Rensselaer Polytechnic Institute on *Lateral Resistance of Piles in Liquefiable Soil*;

- Professor James K. Mitchell of Virginia Polytechnic Institute and State University on *Improvement of Liquefiable Soils*;

- Professor Geoffrey R. Martin of the University of Southern California on *Remediation of Bridge Foundations in Liquefiable Soil*; and

- Professor W.D. Liam Finn of the University of British Columbia on *Effective Stress Analysis of Soil Liquefaction*.

In addition to these formal presentations, Dr. Edward Kavazanjian, Jr. of GeoSyntec Consultants, the workshop moderator, conducted two problem sessions to illustrate application of the methodology for liquefaction potential contained in the GEC manual and NHI training course. On the day after the workshop, the presenters participated in a lively panel discussion on *Current Developments and Needs in Liquefaction Analysis* at one of the regular sessions for the TRB meeting.

This CD constitutes the Proceedings for the workshop. Included on the CD are presentation overheads, reference lists, lecture notes, workshop examples, and technical papers contributed by the presenters to the Proceedings. The file labeled "Content.pdf" provides a summary of the various contributions to these Proceedings.

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